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PATENT TRADEMARK OFFICE

Docket No: 3322/0H401

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Joanne M. MEYER, Rory BARRINGTON-MARTIN,  
 Alexander PARKER, Glenn T. BARNES

Serial No.: 09/770,107

Art Unit: 1637

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Examiner: Wilder, Cynthia B

For: COMPOSITIONS AND METHODS FOR THE DIAGNOSIS AND TREATMENT OF  
 NEUROPSYCHIATRIC DISORDERS, INCLUDING SCHIZOPHRENIA

## Courtesy Copy of Claims as Pending

1. An isolated nucleic acid which comprises a nucleotide sequence of a polymorphic region of a DISC1 allelic variant, wherein the DISC1 allelic variant has a nucleotide sequence that differs from a reference nucleotide sequence selected from the group consisting of:

- (a) the nucleotide sequence set forth in SEQ ID NO:1;
- (b) a DISC1 nucleotide sequence contained in the clone RP11-17H4, RP11-9801, RP4-584N17, RP5-865N13 or RP4-730B13; and
- (c) the nucleotide sequence set forth in SEQ ID NO:4.

2. The isolated nucleic acid of claim 1 wherein the polymorphic region is located in a 5' promoter region.

3. The isolated nucleic acid of claim 1 wherein the polymorphic region is located in an intron.

4. The isolated nucleic acid of claim 1 wherein the polymorphic region is located in an exon.

5. The isolated nucleic acid of claim 1 which comprises a nucleotide sequence selected from the group consisting of SEQ ID NOS:33-43 and complementary sequences thereof.

6. A kit for amplifying or determining the molecular structure of at least a portion of a DISC1 nucleic acid, which kit comprises:

a probe or primer capable of hybridizing to a polymorphic region of a DISC1 nucleic acid; and  
instructions for use.

7. The kit of claim 6, wherein the DISC1 nucleic acid is from a human DISC1 gene.

8. The kit of claim 7 wherein the probe or primer is capable of hybridizing to a polymorphic region of a DISC1 allelic variant, wherein the DISC1 allelic variant has a nucleotide sequence that differs from a reference nucleotide sequence selected from the group consisting of:

- (a) the nucleotide sequence set forth in SEQ ID NO:1;
- (b) a DISC1 nucleotide sequence contained in the clone RP11-17H4, RP11-

9801, RP4-584N17, RP5-865N13 or RP4-730B13;

- (c) the nucleotide sequence set forth in SEQ ID NO:4; and
- (d) complementary sequences thereof.

9. The kit of claim 8 wherein the polymorphic region is located in a 5' promoter region.

10. The kit of claim 8 wherein the polymorphic region is located in a 3' untranslated region.

11. The kit of claim 8 wherein the polymorphic region is located in an intron.

12. The kit of claim 8 wherein the polymorphic region is located in an exon.

13. The kit of claim 8 wherein the polymorphic region comprises a nucleotide sequence selected from the group consisting of SEQ ID NOS:33-43 and complementary sequences thereof.

14. The kit of claim 8 wherein the probe or primer is a single stranded nucleic acid.

15. The kit of claim 8 wherein the probe or primer is labeled.

16. The kit of claim 8 wherein the probe or primer has a nucleotide sequence from about 15 to about 30 nucleotides in length.

17. The kit of claim 16 wherein the probe or primer comprises a nucleotide sequence selected from the group consisting of SEQ ID NOS:33-127 and

complementary sequences thereof.

18. A kit according to claim 16 which comprises a first primer and a second primer, wherein the first and second primers are selected from the group consisting of SEQ ID NOS:33-127 and complementary sequences thereof.

19. A kit for determining whether a subject is at risk of developing a neuropsychiatric disorder, which kit comprises:

a probe or primer that is capable of hybridizing to a polymorphic region of a DISC1 nucleic acid; and  
instructions for use.

20. The kit of claim 19, wherein the neuropsychiatric disorder is schizophrenia, schizoaffective disorder, bipolar disorder, unipolar affective disorder and adolescent conduct disorder.

21. A method for detecting a DISC1 allelic variant, which method comprises contacting a sample DISC1 nucleic acid with a probe or primer complementary to a polymorphic region of a DISC1 allelic variant so that the DISC1 allelic variant is detected in the sample DISC1 nucleic acid.

22. The method of claim 21 wherein the DISC1 allelic variant has a nucleotide sequence that differs from a reference nucleotide sequence selected from the group consisting of:

- (a) the nucleotide sequence set forth in SEQ ID NO:1;
- (b) a DISC1 nucleotide sequence contained in the clone RP11-17H4, RP11-9801, RP4-584N17, RP5-865N13 or RP4-730B13;
- (c) the nucleotide sequence set forth in SEQ ID NO:4; and

(d) complementary sequences thereof.

23. The method of claim 21 further comprising determining the identity of the DISC1 allelic variant.

24. A method according to claim 23 which comprises determining the identity of at least one nucleotide of the sample DISC1 nucleic acid.

25. The method of claim 24 wherein the sequence of the polymorphic region of the sample DISC1 nucleic acid is determined.

26. The method of claim 23 wherein the identity of the DISC1 allelic variant is determined by restriction enzyme analysis.

27. The method of claim 23 wherein the identity of the DISC1 allelic variant is determined by single-stranded conformational polymorphism.

28. The method of claim 23 wherein the identity of the DISC1 allelic variant is determined by allelic specific hybridization.

29. The method of claim 21 wherein the identity of the DISC1 allelic variant is determined by primer specific extension.

30. The method of claim 21 wherein the identity of the DISC1 allelic variant is determined by an oligonucleotide ligation assay.

31. The method of claim 21 wherein the DISC1 allelic variant is an allelic variant of a human DISC1 gene.

32. The method of claim 21 wherein the nucleotide sequence of the probe or primer is from about 15 to about 30 nucleotides in length.

33. The method of claim 32 wherein the probe or primer comprises a nucleotide sequence selected from the group consisting of SEQ ID NOS: 33-127 and complementary sequences thereof.

34. A method according to claim 21 which further comprises contacting the sample DISC1 nucleic acid with a second probe or primer, wherein each probe or primer has a nucleotide sequence selected from the group consisting of SEQ ID NOS: 33-127 and complementary sequences thereof.

35. The method of claim 34 which comprises hybridizing the two probes or primers to the sample DISC1 nucleic acid.

36. The method of claim 21 wherein the probe or primer is a single stranded nucleic acid.

37. The method of claim 21 wherein the probe or primer is labeled.

38. A method for determining whether a subject has or is at risk of developing a disease or disorder associated with a specific DISC1 allelic variant, which method comprises identifying, according to the method of claim 21, the DISC1 allelic variant in a nucleic acid sample from the subject.

39. The method of claim 38 wherein the disease or disorder is a neuropsychiatric disorder.

40. The method of claim 39 wherein the neuropsychiatric disorder is selected from the group consisting of schizophrenia, schizoaffective disorder, bipolar disorder, unipolar affective disorder and adolescent conduct disorder.

41. The method of claim 40 wherein the neuropsychiatric disorder is schizophrenia.

42. A method for selecting an appropriate drug for administration to an individual, which method comprises determining the molecular structure of at least a portion of the DISC1 gene of the individual.

43. The method of claim 42 wherein the molecular structure is determined according to a method that comprises determining the identity of an allelic variant of at least one polymorphic region of the DISC1 gene of the individual.

54.(New) An isolated nucleic acid which comprises a nucleotide sequence of a polymorphic region of a DISC1 allelic variant, wherein the DISC1 allelic variant has a nucleotide sequence that differs from a reference nucleotide sequence selected from the group consisting of:

- (a) the nucleotide sequence set forth in SEQ ID NO:1; and
- (b) a DISC1 nucleotide sequence contained in the clone RP11-17H4, RP11-9801, RP4-584N17, RP5-865N13 or RP4-730B13.

55. (New)The isolated nucleic acid of claim 54 which comprises nucleotide sequence SEQ ID NO:33 and complementary sequences thereof.

56. (New) The isolated nucleic acid of claim 54 which comprises nucleotide

sequence SEQ ID NO:35 and complementary sequences thereof.

57. (New) The kit of claim 7 wherein the probe or primer is capable of hybridizing to a polymorphic region of a DISC1 allelic variant, wherein the DISC1 allelic variant has a nucleotide sequence that differs from a reference nucleotide sequence selected from the group consisting of:

- (a) the nucleotide sequence set forth in SEQ ID NO:1;
- (b) a DISC1 nucleotide sequence contained in the clone RP11-17H4, RP11-9801, RP4-584N17, RP5-865N13 or RP4-730B13; and
- (c) complementary sequences thereof.

58. (New) The kit of claim 57 wherein the polymorphic region comprises nucleotide sequence SEQ ID NO:33 and complementary sequences thereof.

59. (New) The kit of claim 57 wherein the polymorphic region comprises nucleotide sequence SEQ ID NO:35 and complementary sequences thereof.

60. (New) The kit of claim 57 wherein the probe or primer comprises nucleotide sequence SEQ ID NO: 33 and complementary sequences thereof.

61. (New) The kit of claim 57 wherein the probe or primer comprises nucleotide sequence SEQ ID NO: 35 and complementary sequences thereof.

62. (New) A kit according to claim 16 which comprises a first primer which is selected from the group consisting of SEQ ID NOS: 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, and 126 and a second primer which is selected from the group consisting of SEQ ID NOS: 45, 47,

49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79, 81, 83, 85, 87, 89, 91, 93, 95, 97, 99, 101, 103, 105, 107, 109, 111, 113, 115, 117, 119, 121, 123, 125, and 127.